AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A droplet discharging apparatus comprising:

means for discharging a discharge liquid in the form of droplets through an aperture by mechanically deforming a piezoelectric element ~~by~~ using a normal drive signal;

wherein the piezoelectric element is subjected to a heating drive signal of a repetitive frequency in an ultrasonic band when the aperture is positioned in an image formation region, the heating drive signal is ~~being~~ insufficient to cause droplets from being discharged through the aperture thereby facilitating heating of the droplets;

wherein the normal drive signal and the heating drive signal are both generated by a single waveform generating section;

controlling an X-direction drive motor that moves the aperture in an X-direction and a Y-direction drive motor that moves the aperture in a Y-direction using an arithmetic control section in receipt of setting information generated by a control computer;

generating drive signals using the waveform generating section based on drive signal data generated by the arithmetic control section, the waveform generating section generates a plurality of drive signals of predetermined shapes, including the normal drive signal and the heating drive signal;

outputting the drive signals to a switching circuit; and

generating selection data using the arithmetic control section and outputting the selection data to a switching signal generator, the selection data designates the drive signal to be applied to the piezoelectric element.

2. (Original) The droplet discharging apparatus according to Claim 1, wherein the heating drive signal is applied to the piezoelectric element immediately before a droplet is discharged by the normal drive signal.

3. (Original) The droplet discharging apparatus according to Claim 1, wherein the heating drive signal is applied to the piezoelectric element while a droplet is being discharged by the normal drive signal.

4. (Original) The droplet discharging apparatus according to Claim 1, wherein the heating drive signal is applied to the piezoelectric element if the temperature of a discharge liquid that is detected by a temperature detecting means drops below a predetermined threshold temperature.

5. (Original) The droplet discharging apparatus according to Claim 1, wherein the repetitive frequency of the heating drive signal is 40 kHz or more.

6. (Original) The droplet discharging apparatus according to Claim 1, wherein the amplitude of the heating drive signal is half that or less of the normal drive signal.

7. (Original) The droplet discharging apparatus according Claim1, wherein the discharge liquid is a printing ink.

8. (Original) The droplet discharging apparatus according to Claim 1, wherein the discharge liquid is an electrically conductive material for forming a wiring pattern.

9. (Original) The droplet discharging apparatus according Claim 1, wherein the discharge liquid is a transparent resin for forming a microlens.

10. (Original) The droplet discharging apparatus according to Claim 1, wherein the discharge liquid is a resin for forming a color layer of a color filter.

11. (Original) The droplet discharging apparatus according to Claim 1, wherein the discharge liquid is an electro-optic material.

12. (Original) The droplet discharging apparatus according to Claim 11, wherein the electro-optic material is a fluorescent organic compound presenting electroluminescence.

13. (Previously Presented) The droplet discharging apparatus according to Claim 12, wherein the heating drive signal is applied to the piezoelectric element before, during and after a preliminary discharging operation.

14. (Currently Amended) A droplet discharging method comprising:

discharging a discharge liquid in the form of droplets through an aperture by mechanically deforming a piezoelectric element by a normal drive signal;

wherein the discharge liquid is heated by subjecting the piezoelectric element to heating drive signal at a repetitive frequency in an ultrasonic band, the

heating drive signal being insufficient to cause the discharge liquid from being discharged through the aperture thereby facilitating heating of the droplets; ~~and~~

wherein the normal drive signal and the heating drive signal are both generated by a single waveform generating section;

controlling an X-direction drive motor that moves the aperture in an X-direction and a Y-direction drive motor that moves the aperture in a Y-direction using an arithmetic control section in receipt of setting information generated by a control computer;

generating drive signals using the waveform generating section based on drive signal data generated by the arithmetic control section, the waveform generating section generates a plurality of drive signals of predetermined shapes, including the normal drive signal and the heating drive signal;

outputting the drive signals to a switching circuit; and

generating selection data using the arithmetic control section and outputting the selection data to a switching signal generator, the selection data designates the drive signal to be applied to the piezoelectric element.

15. (Original) The droplet discharging method according to Claim 14, wherein the heating drive is carried out immediately before the normal drive for discharging a droplet.

16. (Original) The droplet discharging method according to Claim 14, wherein the heating drive is carried out during the normal drive.

17. (Original) The droplet discharging method according to Claim 14, wherein the heating drive is carried out if the temperature of a discharge liquid drops below a predetermined threshold temperature.

18. (Original) The droplet discharging method according to Claim 14, wherein the repetitive frequency of the heating drive is 40 kHz or more.

19. (Original) The droplet discharging method according to Claim 14, wherein the heating drive is carried out at an amplitude that is half that or less of the normal drive.

20. (Original) The droplet discharging method according to Claim 14, wherein the discharge liquid is a printing ink.

21. (Original) The droplet discharging method according to Claim 14, wherein the discharge liquid is an electrically conductive material for forming a wiring pattern.

22. (Original) The droplet discharging method according to Claim 14, wherein the discharge liquid is a transparent resin for forming a microlens.

23. (Original) The droplet discharging method according to Claim 14, wherein the discharge liquid is a resin for forming a color layer of a color filter.

24. (Original) The droplet discharging method according to Claim 14, wherein the discharge liquid is an electro-optic material.

25. (Original) The droplet discharging method according to Claim 24, wherein the electro-optic material is a fluorescent organic compound presenting electroluminescence.

26. (Previously Presented) The droplet discharging method according to Claim 14, wherein the heating drive signal is applied to the piezoelectric element before, during and after a preliminary discharging operation.